FINAL ON-SITE MITIGATION PLAN

STATE ROUTE 99 SAFETY AND OPERATIONAL IMPROVEMENT PROJECT SEGMENT 2 (FEATHER RIVER BRIDGE)

EA 03-1A4321

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SUMMARY

This conceptual mitigation plan (CMP) for State Route 99 Safety and Operational Improvement Project: Segment 2 – Feather River Bridge has been prepared to satisfy requirements of the U.S. Army Corps of Engineers (USACE) 404 Individual Permit, Central Valley Regional Water Quality Control Board (CVRWQCB) 401 Permit and California Department of Fish and Game (CDFG) 1602 Streambed Alteration Agreement for permanent and temporary impacts to roadside ditches and riparian habitat and unnamed tributaries to the Feather River watershed.

The goal of this Caltrans revegetation effort is to restore and revegetate roadside drainages and riparian areas temporarily impacted by construction activities. The typical impacts covered under this CMP are the relocation and improvement of existing roadside ditches and extension of existing cross culverts. The existing roadside ditches primarily convey stormwater runoff from the roadways and a small amount of agricultural runoff in limited locations. The riparian areas occur around the Feather River bridge and Nelson Slough and will be effected by vegetation removal for access. This plan outlines strategies for revegetation, including commitments for success criteria, monitoring, reporting and remedial measures if success is not initially achieved.

Please see the permit application and wetland delineation for the project description and project impacts.

EXISTING CONDITIONS

Stormwater Conveynace Systems (Roadside Ditches)

The existing stormwater conveyance system includes roadside ditches and cross culverts. Permanent impacts to wetlands, riparian wetlands and other waters will be mitigated for by the acquisition of mitigation credits at a USACE approved mitigation area. (Beach Lake Mitigation Bank).

Existing stormwater conveyance systems are narrow roadside ditches that are undersized and under-designed to properly manage stormwater runoff and agriculture seepage. In many locations along the project length, there are no ditches. Following construction there will be an additional 5340 linear feet (0.62 acres) of new stormwater conveyance. The cross culverts are adequately sized but will be extended (to the east) to accommodate the newly widened roadway and shoulder.

Vegetation impacted by the re-location of the existing roadside ditches is ruderal grasses and non-native plant species like soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), medusa-head (*Taeniatherum caput-medusae*), Italian ryegrass (*Lolium multiflorum*), wild oats (*Avena barbata*), yellow star thistle (*Centaurea solstitialis*), common vetch (*Vicia sativa*), rose clover (*Trifolium hirtum*) verbena (*Verbena bonariensis*) and Johnson grass (*Sorgum xalapense*).

Riparian Habitats

The Feather River and Nelson Slough both occur within the confines of the Feather River levees. From south to north (Please see Figure 1):

1. There is a perennial wetland created by a backwater of the Feather River at the tow of the southern levee. This backwater channel is inundated with *Ludwigea peploides* a non-native wetland species. The border of the wetland has *Cephalanthus occidentalis, Salix douglassiana., populus fremintii, Quercus lobata* and *Acer negundo*.

2. Between the backwater wetland and the Feather River is an upland area that was defined by the US Army Corp as Palustrine Riparian forest. This area is made up of box elder, cottonwood and Valley oak and an understory of *Rubus discolor, Sorghum halepense, Cyperus eragrostis, Phylla nodiflora, Cynadon dactylon* and *Utica dioica* sp.*gracilus*..

3. The Feather River: This is an open water channel bordered by riparian forest (see above) on the south and *Salix douglassiana* on the north.

4. CDFG Wildlife area: This is a large open area vegetated by scattered cottonwoods and ground-cover of native and non-native grasses and vegetation like *Verbena bonariensis, Brassica negra, Centaurea stolstitalis, lepidium latifolia* and *bromus diandrus*.

5. Nelson Slough: The slough, which is dry in the project area during most of the year is comprised of a dense overstory of *Quercus lobata* and *Populus fremontii*.

ON-SITE RESTORATION/REVEGETATION/CREATION FOLLOWING CONSTRUCTION

Caltrans is proposing the following to offset impacts to roadside ditches referred to in the seeded areas :

Restore and revegetate 0.028 acres (50 linear feet) of roadside ditch
Replace and vegetate 1.004 acres (3355 linear feet) of roadside ditch
Create and vegetate 0.620 acres (5340 linear feet) of new roadside ditch

The restored, replaced and created ditches will be seeded by the contractor following completion of construction activities in those area. The species being used in the seed mix are the following: *Bromus carinatus, Escholzia californica, Lavia platyglossa, Leymus triticoides, Descampsia cespitosa*.

Caltrans is proposing the following to offset impacts to riparian habitat referred to as the planted areas:

Restore and revegetate 1.055 acres of riparian habitat
Vegetate 0.605 acres of riparian habitat

MEASURES PROPOSED WITH CONSTRUCTION PROJECT:

- Implementing construction BMP's. The contractor will need to submit a Water Pollution Control Plan that meets the standards and objectives to minimize water pollution impacts set forth in section 7-1.01G of Caltrans' Standard Specifications, identified in the Central Valley Water Quality Control Board's Basin Plan and additional measures included in the 401 certification, 1601 CDFG agreement and USACOE 404 permit. The Water Pollution plan will outline temporary construction BMP's and the goal of weed free construction equipment, staging areas and erosion control treatments.
- Riparian trees (willow, oak, ash, button willow, box elder, etc) from the edge of the new bridge to the right of way will be cut back or avoided to the fullest extent possible. Some full removal will be necessary to have enough room for construction. Particular emphasis will be placed on cutting back the willows along the banks of the river.
- At the completion of construction topography and flow patterns will be restored to as close to pre-construction contours as possible.

- All areas of impact between the levees will be drill seeded with the mixture discussed below as means of meeting the immediate post construction erosion control requirements and BMP's. The goal of the Caltrans erosion control is to establish vegetative cover and to stabilize and protect the soil surface.

MEASURES PROPOSED AT THE COMPLETION OF THE CONSTRUCTION PROJECT:
Construction activities within the project area are expected to last four seasons (based on budget the project is expected to begin in 2010). Most of the time will be spent on construction of the bridge. It is undetermined as to how the contractor will stage activities outside of the bridge work. They may complete construction outside of the levees early or they could complete it towards the end of the bridge construction. Regardless, it is expected that the contractor will seed the ditches as they are completed to meet their SWPPP requirements. As work is completed, monitoring of the sites will occur the following year by a Caltrans biologist.

Caltrans is proposing to restore and revegetate disturbed riparian areas within the levees that were temporarily impacted. Please see Figures 2-4. Once construction is complete, a final site review will be performed by the biologist/revegetation specialist to ensure the topography is restored and appropriate for planting. Planting of riparian trees will be conducted using the combination of riparian species and the density that are appropriate for the specific conditions at each location, based on pre-construction site reviews and reference areas upstream and downstream of the work. The post construction survey is needed, to confirm replanting needs, because construction impacts and tree removal may be less than estimated. .

The general planting strategy will be to use willow cuttings wherever appropriate soil and moisture conditions are present within impacted areas. This will be particularly focused on the banks of the Feather River. All cuttings will be collected from the project corridor, in coordination with the Resident Engineer and District biologist/construction liaison. Cuttings will be taken from no more than 50% of the willow plants in an area and from no more than 30% of an individual plant. Willow cuttings and container material of cottonwood and buttonwillow will be used within approximately 50 feet of the banks of the Feather River, along the edge and partially within the backwater wetland and along the edge of Nelson Slough. The palustrine riparian area between the backwater and the Feather River as well as the upland area within 100 feet of Nelson Slough (but not beneath the new bridge) will be planted with container material of valley oak, box elder, Oregon ash and cottonwood referred to in the plan as large species. Under the bridge and interspersed within the large species will be medium sized shrubs including but not limited to *Cephalanthes occidentalis, Calycanthus occidentalis, Salix* sp. *Bacharis pillularis* and *Rosa californica*. Mixed in with the large and medium and spread out under the new bridge will be the smaller plants including *Elymus glaucus, Leymus elymoides, Vitis californica, Carex barbari* and *Muhlenbergia regims*.

IMPLEMENTATION SCHEDULE
The seed mix for restoration and replacement of the roadside ditches will be applied as a hydro-seed mixture with mulch and fertilizer included in the mix. Caltrans standard specifications will be used for application of this mix.

Construction activities for the project are expected to occur over 4 work seasons (starting spring 2010 and ending October 2014). These dates could vary depending upon funding, the contractor and any construction unknowns. Temporary on-site erosion control will be in place at the end of each work season and permanent erosion control will occur by the close of the final work season. Revegetation plantings will be conducted in the late fall/winter (between November 1-February 1). Depending on when construction activities are complete, revegetation planting will be

performed either immediately following construction or the first November following construction. Revegetation work will be implemented using the California Conservation Corps, with oversight provided by the Caltrans Revegetation Specialist and Project Biologist.

METHODOLOGY

PLANT MATERIAL

All container plants and will be generated from materials collected from the vicinity of the project or of similar elevation and habitat characteristics. Willow cuttings will be obtained from the vicinity of the project from along the existing Caltrans right of way.

MULCH-SOIL AMENDMENTS

Soil compaction at each planting will be relieved by digging large planting holes and amending with unscreened compost and slow release organic fertilizer. After planting, each plant will receive a ½ cup of slow release organic fertilizer in a 1-foot radius around the plant. Plants outside the active water channel will be mulched with 4 inches of pine needles or wood chips in a 1 1/2-foot radius around the plant.

WATERING/IRRIGATION PLAN

Plants will be watered in at planting and will receive supplemental watering by hand. The watering schedule will be determined based on natural precipitation, temperature and site monitoring in an effort to determine actual needs. The goal will be to provide water necessary to successfully establish deep rooted plants, that are quickly able to survive on their own, rather than surface rooted plants that rely on regular watering. To accomplish this goal, the proposed schedule will be to water plants after planting once a week for three weeks and then once every 2-3 weeks until the onset of natural precipitation and winter conditions (estimated through October/November) and then over the first summer and fall once every 3 weeks, ending in October/November. Second summer watering will be conducted only if replacement plantings are performed. Plantings will be deeply watered, receiving approximately 2 gallons over a very slow rate to ensure water is being absorbed. The compost in the soil will assist with water holding capacity. Watering will be performed by the California Conservation Corp, at the direction of the Revegetation Specialist.

Maintenance Activities and Schedules

Caltrans is proposing to provide maintenance activities at planted areas for three years. Maintenance funding will be available over the three year CCC contract to address needed measures or problems that arise. Potential maintenance will include such activities as reseeding, replacement plantings, retreating areas to improve plant cover, remulching or weeding plant basins. Site inspections are proposed after planting and then over the following three growing seasons (see monitoring below). These site reviews will be used to identify the need for specific maintenance actions.

MONITORING METHODS AND SCHEDULE:

Roadside Ditches

Seeded areas will be photo and visually monitored starting the following spring after the completion of construction. It is possible that the entire project including the entire creation/restoration/replacement may not be completed. This will be documented. If the spring survey shows that the seed mix has not developed as expected, the contractor will be required to re-seed the area and may have to water for germination. Most of these details are covered under the SWPPP that the contractor is required to prepare at the start of construction. It is not expected that these areas will go through the rainy seasons without additional application if the mix has

failed to prevent erosion. Caltrans is proposing 2 spring surveys following the planting of each area covered under this plan.

Riparian Habitat

The planted areas will be visually inspected by the revegetation specialist/project biologist at least 2 times over the first fall after planting and 3 times over the first summer to verify plant establishment, growth, watering or maintenance needs or to ensure no problems have occurred. If no problems results, 2 inspections/year over the second and third year will be performed to ensure success. If problems are identified, additional inspections will be added to address issues and ensure remediation. Results will be documented on aerials or project plans. Permanent photo points will be set up to document the mitigation effort. Monitoring will be performed once each year between April 1 and June 1, for a period of five years. Census sampling will be used to obtain and address these performance criteria.

REPORTING AND PERFORMANCE

Annual Reports: Results from monitoring will be documented and forwarded to NOAA and CDFG annually or as required by permits. The first monitoring report will be due one year after the completion of the mitigation implementation. The report will assess progress to date and the attainment of yearly performance criteria and progress towards final success criteria. Monitoring and report criteria will continue until the success criteria have been met.

Performance Criteria

Roadside Ditches

Restored areas shall contain a minimum of 60% of the target species identified on page 1 and consistent with the reference site. Water flow patterns will be established as planned, with no identified erosion problems.

Riparian

Prior to sampling, vegetation composition, target species and plant densities will be characterized from adjacent undisturbed habitat. Target species will be determined based on the 10 most common forb/shrub and tree species found at each of the reference sites. These vegetation characteristics documented, will serve as the success criteria or goal for the restoration effort.

First through second year performance criteria will be met if:

- Mitigation sites contain at minimum 5 of the 10 most common native species (target species) identified from reference sites.
- Minimum 75 percent survival of the plantings is achieved or maintaining at least one established tree every 10 feet, shrubs on 5 foot centers..
- Water flow patterns have established as planned and no erosion problems are identified.

Final Performance Criteria: Third-fifth year criteria will be met if:

- Mitigation sites contain the full complement of target species from reference sites (10 of 10).
- Stable plant survival documented: 95% survival of original 75% of plantings, or maintaining at least one established tree every 10 feet, shrubs on 5 foot centers. Continual increases in plant cover documented through photos.
- Water flow patterns are functioning as planned.
- No erosion or sedimentation is observed.

CONTINGENCY MEASURES

If a performance criterion is not met for all or any portion of the mitigation project in any year, additional effort will be implemented to meet the criterion stated above. The reason for not meeting the criterion will be evaluated and corrected. If significant measures are needed, the planting strategy will be re-evaluated, including looking at soil conditions, hydrology, site preparation, planting techniques and materials. Caltrans will also coordinate with the permitting agencies to determine appropriate remedial actions and obtain approval. If significant remediation measures are needed, the maintenance and monitoring obligations will continue until the National Marine Fisheries Service and California Dept. of Fish and Game gives the final project confirmation.